"OEHHA has the experience and the wealth of knowledge to break new ground in the environmental health field and provide the scientific information to meet California's ambitious environmental goals. I want to make sure that happens."

—Dr. Joan Denton, Director, Office Of Environmental Health Hazard Assessment

California is known for trailblazing programs to reduce pollution and exposure to hazardous substances. These actions begin with scientists who identified the most significant pollutants, assessed the impact they can have on human health and the environment, and determined levels of these pollutants that pose a significant threat. These important responsibilities belong to the scientists who work in the Office of Environmental Health Hazard Assessment (OEHHA), the risk assessment arm of the California Environmental Protection Agency (Cal/EPA).

- The smallest of the six Cal/EPA statutory programs, OEHHA is not a regulatory agency in the traditional sense. It is the only office in Cal/EPA that has no enforcement authority, and its regulatory powers are limited. OEHHA is commonly known as the scientific arm of Cal/EPA.
- From its beginnings as an air epidemiology unit within the Department of Public Health (DPH) in the 1950s, OEHHA has grown into a well-respected concentration of toxicologists, epidemiologists, physicians, and other research scientists. Through risk assessment practices, the office's work helps establish the scientific basis for other regulatory programs, both within and outside of Cal/EPA, including those dealing with criteria air pollutants and air toxics, pesticides, drinking water safety, and hazardous waste.
- OEHHA is also the lead agency for Proposition 65, the landmark 1986 initiative approved by California voters to identify chemicals that cause cancer and reproductive harm. This Act also insures that harmful levels of these chemicals are not discharged into drinking water and that reasonable warning is given when people may be exposed to them.
- Finally, OEHHA operates the state's Registered Environmental Assessor program, which registers and maintains a list of qualified professionals to help businesses perform environmental work.

OEHHA officially came into its own on July 17, 1991 with the formation of Cal/EPA, but its roots extend back several decades to the early years of California's environmental awareness and desire to protect the health of its citizens.

The '50s ushered in a period of continued growth fueled by an expanding industrial economy.

Environmental consequences began to develop as well.

- Over 4.5 million cars populated California's highways, escalating air pollution, especially in the Los Angeles area, and California's citizens began to demand action.
- Federal recognition of the air pollution problem came in the form of the Federal Air Pollution Control Act of 1955 and;
- Four years later, California enacted legislation to establish air quality standards and necessary controls for motor vehicle emissions.

As part of this effort, the air epidemiology unit, headed by John Goldsmith, was to determine how air pollution affected human

health. The unit evolved over the years into OEHHA's Air Toxicology and Epidemiology Section (ATES), which continues to study the health effects of air pollution today.

The '60s continued a trend toward increased environmental awareness. In 1962, the toxicity of pesticides came to the forefront with the publication of Rachel Carson's "Silent Spring". The book fueled concerns about the adverse environmental impacts of excessive pesticide use and the safety of growers, farm workers, and the general public. Don Mengle was recruited to develop a pesticide program for monitoring and evaluating agricultural worker pesticide safety. This program was the forerunner of OEHHA's Pesticide and Environmental Toxicology Section (PETS).

The air epidemiology unit, along with most of DPH, was based in Berkeley and located, by design, across from the UC Berkeley School of Public Health. In 1966, following Ronald Reagan's election as California's governor, DPH was absorbed into a new health super-agency and its programs ultimately incorporated into the Department of Health Services (DHS). The department headquarters was relocated to Sacramento, with only the public health laboratories remaining in Berkeley.

On April 22, 1970, the first Earth Day set the stage for a plethora of environmental legislation on both federal and state levels.

- The U.S. Environmental Protection Agency (U.S. EPA) was formed and
- California took the first step toward standards for environmental assessment and accountability with implementation of the California Environmental Quality Act (CEQA).

In 1972, Congress approved both the Federal Water Pollution Control Act to control urban and industrial water pollution and the Federal Environmental Pesticide Control Act to provide federal and state control over pesticide use on national forest lands.

The focus on hazardous wastes intensified in the early '80s, following revelations surrounding the contamination of New York's Love Canal. The magnitude of the devastation on the health of people living in communities surrounding the Love Canal site was a sobering reminder that threats to human health and the environment could come from invisible chemical pollutants with no odor or taste. More than ever, there was a need to catalog these pollutants and assess their ability to cause cancer, birth defects, and other serious health ailments.

To deal with hazardous waste issues at the state level, Governor Jerry Brown created the Environmental Toxics Epidemiology Unit within DHS, the predecessor to OEHHA's Hazardous Waste Toxicology Section (HWTS). Proceeds from a $100 million state bond measure for hazardous waste site cleanup allowed HWTS to work with the Toxic Substance Control Division of DHS (now the Department of Toxic Substances Control under Cal/EPA) to evaluate health risks from sites and facilities that stored and disposed of hazardous waste. Some of the hazardous waste sites requiring the unit's expertise included the Stringfellow Acid Pits, the McColl waste site in Fullerton, and the Montrose Chemical Plant discharge of DDT into the Pacific Ocean.

In 1981, the Hazard Evaluation System and Information Services and Epidemiological Studies Section (ESS) concentrated on questions regarding the toxicity of pesticides. Because of interest in the field and progress made, the following year saw the ESS doubled in size and the Community Toxicology Unit was created.

In 1986, opinion polls indicated that fears surrounding the dangers of toxic waste were the number one concern of Californians. Proposition 65, drafted by a coalition of environmentalists to directly address this concern, struck a chord with voters, who approved the proposition by a significant margin. The first and only law of its kind in the nation, Proposition 65 has resulted in the familiar warning labels on gasoline pumps and alcoholic beverages, as well as the frequent newspaper advertisements placed by facilities using toxic chemicals.

Passage of Proposition 65 proved to be a milestone in OEHHA's evolution. In 1987, Governor George Deukmejian designated the Health and Welfare Agency (HWA) as the lead agency for implementing Proposition 65. HWA then assigned the Health Hazard Assessment Division of DHS to provide scientific support in carrying out the proposition's mandates. The DHS toxicologists added this requirement to their list of responsibilities and began to compile and evaluate information on the health effects of chemicals under consideration for placement on the Proposition 65 list. These scientists formed the nucleus for what is now OEHHA's Reproductive and Cancer Hazard Assessment Section (RCHAS).

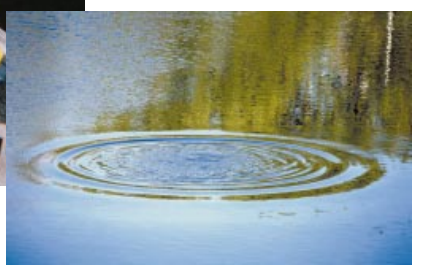
Also in 1987, toxic substances in the air were highlighted once again when news reports focused on "unplanned" releases of toxic emissions. A federal report concluded that 75 percent of the U.S. population lives close to at least one facility that manufactures chemicals and that nearly every chemical plant studied routinely emitted into the surrounding air significant levels of substances considered hazardous or potentially hazardous to public health. In response to these concerns, the California Legislature passed AB 2588, the "Air Toxics Hot Spots" Information and Assessment Act, requiring facilities to report their toxic air

emissions, determine the health impacts associated with those releases, and notify the public of any significant risks. Once again, DHS toxicologists were responsible for determining the health effects of exposure to air toxins, a responsibility later assumed by OEHHA as part of its Air Toxicology and Epidemiology Section (ATES).

In 1989, a widespread insect infestation occurred in Los Angeles and surrounding counties, forcing California's Department of Food and Agriculture to implement the largest and most sustained urban agricultural pest eradication program in California history. Over 30 scientists were tasked by the Legislature and governor to prepare a comprehensive risk assessment for the use of Malathion for agricultural pest eradication in urban areas. OEHHA's predecessor unit within DHS convened an expert panel of scientists and physicians, as well as members of the public, to advise in the preparation of the risk assessment. The result, in 1991, was the most detailed, science-based, comprehensive risk assessment document for the use of Malathion ever produced in the U.S. This document has been used in other states, such as New York and Florida, as well as by the U.S. Department of Agriculture to set policy for the use of pesticides in urban areas.

The election of Governor Pete Wilson in November 1990 represented another major step in the history of OEHHA. During his gubernatorial campaign, Wilson proposed to establish Cal/EPA as a way to improve coordination of the state's environmental protection programs. In the spring of 1991, the Wilson Administration initiated the reorganization plan that would make Cal/EPA (and an independent OEHHA) a reality.

As envisioned by the Wilson Administration and the Legislature, Cal/EPA's primary risk assessment functions would be kept separate from its risk management activities. The other five entities within the proposed agency would be traditional regulatory bodies that would engage in *risk management*, developing control strategies and enacting regulations aimed at reducing the harm posed to life, health, property, and/or the environment by pollution. To this end, OEHHA was formally established, along with Cal/EPA, on July 17, 1991.



OEHHA scientist Dr. Margy Gassel examines a fish as part of OEHHA's work in assessing health risks to humans from eating fish that may be contaminated with mercury and other toxic substances.

Just days before the formation of OEHHA and Cal/EPA, a tragic incident served to emphasize the need for a coordinated, comprehensive approach to dealing with the impacts of toxic substances on public health and the environment. On July 14, 1991, a train carrying the herbicide/pesticide metam sodium derailed, spilling approximately 20,000 gallons of the chemical into the upper Sacramento River near Dunsmuir, north of Redding. An environmental disaster of this magnitude required the cooperation of many state agencies. OEHHA scientists worked with other experts to assess both the immediate and long-term risks associated with the release of this quantity of toxic chemical into the environment.

As part of the establishment of Cal/EPA, Governor Wilson also signed an Executive Order designating OEHHA as the lead agency for implementation of Proposition 65. Since its initial enactment in 1987, the Proposition 65 list of chemicals known to cause cancer or reproductive harm has grown from 27 to more than 700 chemicals today. Listed chemicals range from asbestos, benzene, and various industrial solvents to such familiar substances as alcoholic beverages (stemming from potential harm to the fetus if consumed by pregnant women) and exhaust from diesel and gasoline engines.

In 1992, as the leading state department on issues of risk assessment, OEHHA was directed by Cal/EPA to head the California Comparative Risk Project (partially funded by the U.S. EPA). The project examined the existing programs and procedures for addressing environmental risks to public health, the environment, and quality of life. The resulting report, issued in 1994, was far-reaching in scope and the first of its kind in the nation to incorporate views on environmental justice, pollution prevention, and sustainability. The methods used in the California project also set a precedent for subsequent reports in other cities and states.

Many of the recommendations made in the 1994 report are being utilized today in a variety of California state environmental programs and have been emphasized in other OEHHA projects, such as the Risk Assessment Advisory Committee report, the Emerging Environmental Challenges program, and the current Environmental Indicators project.

In 1995, OEHHA assumed responsibility for operating the state's Registered Environmental Assessor (REA) program. The REA program registers and maintains a list of qualified private-sector professionals who can assist small- to mid-size businesses in performing such tasks as reducing their waste streams, auditing their compliance with environmental regulations, and conducting site assessments. Those certified to the REA list are deemed qualified to evaluate hazardous waste management practices for small to mid-size businesses. There are now more than 4,000 REAs in California, including more than 150 REA II registrants who oversee the assessment and cleanup of contaminated sites.

As early as the 1980s, OEHHA took an increasingly visible position in the regulation of drinking water. While still part of DHS, the Pesticide and Environmental Toxicology Section (PETS) began developing recommended public health levels for drinking water that identified those levels of specific chemical contaminants that would not be expected to pose a significant health risk. In 1996, SB1307 (Calderon) established the California Safe Drinking Water Act, which required OEHHA to develop public health goals for all contaminants for which a

drinking water standard exists. SB1307 requires DHS to set the state's official drinking water standard for a given contaminant as close to the public health goal as is economically and technically feasible. In 1999, OEHHA published a public health goal for the gasoline additive methyl-tertiary butyl ether (MTBE). Use of MTBE, primarily as a fuel additive, increased sharply during the 90s, both in California and in other states. OEHHA's public health goal was published prior to the development of federal primary drinking-water standards or standards from other states and was, therefore, one of the first efforts in the nation to identify a safe drinking-water level for this substance. As of Autumn 2000, OEHHA had published 52 public health goals, including goals for such contaminants as chromium, fluoride, lead, inorganic mercury, toluene, vinyl chloride, the solvent trichloroethylene, and the banned soil fumigant, DBCP.

PETS also evaluates health risks from hazardous chemicals that may be present in sport fish that anglers catch at lakes, reservoirs and coastal areas. Its advisories are included in the fishing regulations published by the Department of Fish and Game, and specify the amounts of fish that can be safely eaten.

OEHHA remains active in the area of pesticide safety for farm workers. Prior to OEHHA's formation, state law required DHS and the Department of Food and Agriculture, which had regulated pesticides, to have a shared responsibility for developing pesticide worker safety regulations. The establishment of Cal/EPA created both OEHHA and the Department of Pesticide Regulation, and both entities continue this shared responsibility.

The reorganization plan that created OEHHA requires the director to have a broad-based scientific expertise as evidenced by a doctorate degree and work experience in a biological or medical science. A succession of directors has guided OEHHA's development during its first decade. Dr. Steven Book served as acting director of the newly formed OEHHA from 1991 to 1992, followed by Dr. Carol Henry, who served as OEHHA director for two years. Dr. James Stratton served as interim director from 1994 to 1996 and was followed by Dr. Richard Becker, who served as director prior to Dr. Joan Denton's appointment in 1997; Governor Gray Davis reappointed Dr. Denton in 2000.

The last two years have been an exciting time of growth and development at OEHHA, which has received the support of the Davis Administration and the Legislature in addressing new questions relating to potential health risks posed by environmental contaminants. In 1999, SB25 (Escutia) (known as the Children's Environmental Health Protection Act) directed OEHHA and the California Air Resources Board to evaluate the state's ambient air quality standards and air toxics regulations to determine whether they adequately protect children and infants. This important work is now underway and will lead to the revision of any air quality standards and toxics measures deemed inadequate to protect children.

Similarly, as part of a new Cal/EPA initiative, OEHHA will be developing new risk assessment guidelines for schools, as well as new cancer risk assessment guidelines for children. HWTS is providing assistance to regional water boards on assessing local health risks and is working to develop and provide an education, training, and scientific assistance program in toxicology and health risk assessment for local agencies in California and Mexican counterpart agencies.

In 2000, Cal/EPA Secretary Winston Hickox designated OEHHA as the lead entity in a multi-agency effort to develop new kinds of measurements, or "indicators," that will better enable scientists and regulators to determine the true health of California's environment and assess the effectiveness of the state's environmental programs. The first set of indicators is scheduled for completion in 2001 and will then be evaluated and updated annually.

Finally, OEHHA's mandate to provide State and local government agencies with the scientific tools and information to make effective risk management decisions lends itself to the office's lead status for the Emerging Environmental Challenges Program. The goal of this endeavor is to anticipate future environmental challenges that may surface in the next five to ten years, and then to provide policymakers at Cal/EPA with the information to take a proactive role in addressing events or situations that may impact the ability to protect the public and California's environment.

Incorporating lessons from the past and with an eye toward the future, OEHHA will continue to grow and remain on the cutting edge of environmental science in its responsibilities to protect public health.